STRUCTURE 308
Port Mayaca Lock and Spillway

This structure is a reinforced concrete, gated spillway with discharge controlled by four cable operated, vertical lift gates and a reinforced concrete lock with two sets of sector gates. The structure is located at the head of the St. Lucie Canal on the east shore of Lake Okeechobee.

PURPOSE

This structure and S-77 provide the principal outlet capacity of Lake Okeechobee. The combined capacity of the Lake Okeechobee outlets provide for passing the 100-year and standard project floods without exceeding the lake flood design stage, and restricts downstream flood stages and channel velocities to non-damaging levels. This structure provides means for passing boat traffic between Lake Okeechobee and the St. Lucie Canal. It also prevents hurricane tides on Lake Okeechobee from entering the St. Lucie Canal.

SPILLWAY OPERATING CRITERIA

This structure is operated and maintained by the U.S. Corps of Engineers. If Lake Okeechobee is below 14.5 feet, the structure will release excess water in the St. Lucie Canal back into the lake or make water supply releases from the lake into the canal. If Lake Okeechobee is above 14.5 feet, the structure will make regulatory or water supply releases from the lake into the canal.

LOCK OPERATING CRITERIA

This structure is operated and maintained by the U. S. Corps of Engineers. The lock gates are opened full whenever the Lake Okeechobee stage is below elevation 14.5 feet. When the lake stage is above elevation 14.5 feet, the locks are operated between 6:00 a.m. and 10:00 p.m. daily; between 10:00 p.m. and 6:00 a.m. the lock gates are closed.

FLOOD DISCHARGE CHARACTERISTICS

	Interim Design Standard Project Flood	Ultimate Design Standard Project Flood
Discharge Rate	14,800 cfs	17,000 cfs
Headwater Elevation	24.9 feet	28.0 feet
Tailwater Elevation	23.2 feet	24.5 feet
Type Discharge	Submerged, controlled	

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DESCRIPTION OF SPILLWAY STRUCTURE

Type reinforced concrete, gated spillway

Weir Crest

Net Length 116.0 feet

Elevation 9.1 feet

Service Bridge Elevation 40.0 feet

Water Level which will by-pass structure 32.0 feet (over lock gate)

Gates

Number 4

Size 16.9 ft. high by 29.0 ft. wide

Type vertical slide gates

Bottom elevation of gates, full open 26.0 feet

Top elevation of gate, full closed 26.0 feet

Control Manual

Lifting Mechanism

Normal power source commercial electricity

Emergency power source gasoline engine driven generator

Type Hoist Each gate operated by a hydraulic cylinder, activated by electric motor driven pump, connected to gate by steel cables.

DESCRIPTION OF LOCK STRUCTURE

Type: Reinforced concrete lock, with two pairs of sector gates

Operating Deck Elevations: lakeside: 40.0 feet

landside: 29.0 feet

Lock

Length 400 feet

Width 56 feet

Invert Elevation -3.5 feet

Gates

Type: Sector

Size: landside 23.5 feet high

lakeside 28.5 feet high

Control: Manual

Operating Mechanism

Normal Power Source: commercial electricity

Emergency Power Source: gasoline engine driven generator

Type: Double wire rope drum unit with worm type special reducer, powered by electric motor driven hydraulic motor.

ACCESS: This site is reached via U.S. 441.

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Water Level On-site, dual-recorder

Gate Position Recorder On-site

DEWATERING FACILITIES

Storage U.S. Corps of Engineers

Type Bulkhead gates